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(71) Applicant: MEDTRONIC, INC.
Minneapolis, Minnesota 55432 (US)

(72) Inventors:

Woloszko, Jean San Diego, California 92130 (US) Camps, Antoine N.J.M.
 6287 NJ Eys (NL)

Van Der Kruk, Ron
 6241 CK Bunde (NL)

(74) Representative: Hughes, Andrea Michelle et al Frank B. Dehn & Co., European Patent Attorneys, 179 Queen Victoria Street London EC4V 4EL (GB)

(54) Medical electrical lead

(57)A medical electrical lead for establishing an electrical connection with a tissue of the body, the lead having a lead body 6 and a semi-cylindrical cuff 15. In the preferred embodiment the semi-cylindrical cuff features one or more electrodes 10,11,12. The semi-cylindrical cuff having a long flap 16 which wraps about the cuff and a short flap 17 which wraps about the long flap. The semi-cylindrical cuff is relatively stiff as compared to the short flap. The short flap, in turn, is relatively the same stiffness as the long flap. The stiffness of each flap may be varied, however, so that one is more or less than the other, and in turn, than the cuff. Through such a multi-flap construction the electrodes may be positioned proximal to a nerve in such a manner that the mechanically induced damage may be minimized or even entirely eliminated. Finally, a method of implanting such an electrode is also disclosed.

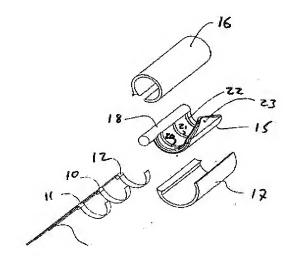


Fig 4A



EUROPEAN SEARCH REPORT

Application Number EP 98 30 1945

Category	Citation of document with indicate of relevant passages	on, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (INLCL4)	
A	US 5 487 756 A (KALLESO 30 January 1996 (1996–0 * column 4, line 38 – c figures *	01-30)	1-9,14	A61N1/05	
A	US 5 344 438 A (TESTERM 6 September 1994 (1994- * column 3, line 4 - co figures *	-09-06)	1,2,4,7, 14		
A	US 4 602 624 A (NAPLES 29 July 1986 (1986-07-2 * column 2, line 41 - c figures *	9)	1-5,7,8		
A	US 4 590 946 A (LOEB GE 27 May 1986 (1986-05-27 * column 3, line 9 - co figures *	')	1,2,14, 16		
A	EP 0 723 788 A (MEDTRON 31 July 1996 (1996-07-3 * page 3, column 3, lin column 5, line 29; figu	1-4,6,7, 13	TECHNICAL FIELDS SEARCHED (Int.Cl.6) A61N		
	US 5 400 784 A (DURAND 28 March 1995 (1995-03- * column 2, line 53 - c figures *	1-3,7,8			
1	US 5 273 053 A (POHNDOR 28 December 1993 (1993- * figures *	1,2,14			
-	US 3 654 933 A (HAGFORS 11 April 1972 (1972-04- * column 2, line 16 - c figures *	1,2,14			
	The present search report has been de	rawn up for all claims	5		
	Place of search	Date of completion of the search	L	Exeminer	
	THE HAGUE	18 October 1999	Rake	otondrajaona, C	
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle E: earlier patent doc after the filing dat D: document cited in L: document cited fo 5: member of the se	T: theory or principle underlying the invention E: serifer patent document, but published on, or after the Sing date D: document alted in the application L: document alted for other reasons &: member of the seme patent family, corresponding document		

EPO FORM 1533 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 1945

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-10-1999

	Patent documen ad in search rep		Publication date		Patent family member(s)		Publication date
US	5487756	A	30-01-1996	NONE			<u> </u>
US	5344438	A	06-09-1994	DE	4413065	A	27-10-199
US	4602624	A	29-07-1986	NONE	و پیونون سے بی موہ سما ہی تسب سے		rend the use the size and this place, and
US	4590946	Α	27-05-1986	NONE			14 († 1565 m.) 4 (4 (1565 m.) 1567 m.)
EP	0723788	A	31-07-1996	US AU AU CA JP	5741319 694822 4093296 2168188 8229139	B A A	21-04-199 30-07-199 08-08-199 28-07-199 10-09-199
US	5400784	A	28-03-1995	AU WO US	7978994 9510227 5634462	A	04-05-199 20-04-199 03-06-199
US	5273053	A	28-12-1993	AU AU CA DE EP JP JP	655373 4873293 2106332 69324102 0597213 2523445 6218066	A A,C D A B	15-12-199 12-05-199 03-05-199 29-04-199 18-05-199 07-08-199
US	3654933	A	11-04-1972	DE DK DK FR GB GB GB JP NL SE	1955517 131973 132105 2023549 2023550 1296550 1298473 1298474 48036280 6917338 375909 364872	BBAAAAAABA.B	30-07-197 06-10-197 27-10-197 21-08-197 21-08-197 15-11-197 06-12-197 06-12-197 02-11-197 20-05-197 01-03-197